



Working memory dysfunctions predict social problem solving skills in schizophrenia

Jia Huang^{a,*}, Shu-ping Tan^b, Sarah C. Walsh^c, Lauren K. Spriggs^c, David L. Neumann^c, David H.K. Shum^c, Raymond C.K. Chan^{a,**}

^a Neuropsychology and Applied Cognitive Neuroscience Laboratory, Key Laboratory of Mental Health, Institute of Psychology, Chinese Academy of Sciences, Beijing, China

^b Psychiatry Research Center, Huilongguan Hospital, Beijing, China

^c Behavioural Basis of Health Research Program, Griffith Health Institute, Griffith University, Gold Coast, Australia

ARTICLE INFO

Article history:

Received 23 September 2013

Received in revised form

19 July 2014

Accepted 19 July 2014

Available online 29 July 2014

Keywords:

Social problem solving

Schizophrenia

Working memory

ABSTRACT

The current study aimed to examine the contribution of neurocognition and social cognition to components of social problem solving. Sixty-seven inpatients with schizophrenia and 31 healthy controls were administered batteries of neurocognitive tests, emotion perception tests, and the Chinese Assessment of Interpersonal Problem Solving Skills (CAIPSS). MANOVAs were conducted to investigate the domains in which patients with schizophrenia showed impairments. Correlations were used to determine which impaired domains were associated with social problem solving, and multiple regression analyses were conducted to compare the relative contribution of neurocognitive and social cognitive functioning to components of social problem solving. Compared with healthy controls, patients with schizophrenia performed significantly worse in sustained attention, working memory, negative emotion, intention identification and all components of the CAIPSS. Specifically, sustained attention, working memory and negative emotion identification were found to correlate with social problem solving and 1-back accuracy significantly predicted the poor performance in social problem solving. Among the dysfunctions in schizophrenia, working memory contributed most to deficits in social problem solving in patients with schizophrenia. This finding provides support for targeting working memory in the development of future social problem solving rehabilitation interventions.

© 2014 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Impaired social function is one of the key diagnostic features of schizophrenia (APA, 2000). Social function can be defined by specific functional outcomes which fit into three categories: (1) psychosocial function, (2) social problem solving ability and (3) broader aspects of behavior in community outcome or activities of daily living (Green et al., 2000). Empirical findings suggest that the poor social problem solving ability observed in patients with schizophrenia are associated with their clinical symptoms (Bjerke et al., 2014), their elevated levels of emotional distress

(Ponizovsky et al., 2013) and negatively impact their quality of life (Hsiao et al., 2012).

The Assessment of Interpersonal Problem Solving Skills (AIPSS) is a widely-used tool to assess specific types of social problem solving ability deficits (Donahoe et al., 1990). It has been shown to be an effective assessment tool in schizophrenia populations (Vaskinn et al., 2009; Leshner et al., 2013). According to the social skills model (Wallace et al., 1980; Bellack, 2004), social problem solving ability is made up of three types of skills: receiving, processing, and sending. *Receiving skills* are the ability to understand or decode social stimuli. These skills include detection of expressions or appropriate social cues, such as tone of voice, gesture, and content of conversations. *Processing skills* involve the critical analysis and ability to reflect on social situations, as well as the integration of real time information with long term memory and response planning. *Sending skills* refer to the ability to generate behavior, paralinguistic skills and verbal content suitable as a response to the demands of social situations. Since the AIPSS was developed, it has been widely used in many countries (Favrod et al., 1998; Kern et al., 2005; Goulding et al., 2010). The Chinese Assessment of Interpersonal Problem Solving Skills (CAIPSS) has

* Correspondence to: Postal address: Room 615, South Building, Institute of Psychology, Chinese Academy of Sciences, 16 Lincui Road, Beijing 100101, China. Tel.: +86 1064870528.

** Correspondence to: Postal address: Room 526, South Building, Institute of Psychology, Chinese Academy of Sciences, 16 Lincui Road, Beijing 100101, China. Tel./fax: +86 1064836274.

E-mail addresses: huangj@psych.ac.cn (J. Huang), rckchan@psych.ac.cn (R.C.K. Chan).

been validated in Hong Kong, China (Leung and Tsang, 2006). However, the Chinese version has not been used in mainland China. Given the difference between Cantonese (which is adopted in Hong Kong) and Pu-tong-hua (the official language spoken across the country in mainland China), and the sub-cultural differences between Hong Kong residents and mainlanders, the validated Hong Kong version may not be directly applicable to mainland Chinese settings. The first aim of the current study was to investigate the specific social problem solving deficits of schizophrenia in mainland China by comparing CAIPSS performance of mainland patients to that of healthy controls.

When exploring the aspects of social skills in which patients with schizophrenia have deficits, one avenue researchers have focused on is to identify the underlying mechanisms that contribute to this area in terms of symptoms (Bjerke et al., 2014), neurocognition (Cochet et al., 2006; Uçok et al., 2006; Zanello et al., 2006) and social cognition (Vaskinn et al., 2008; Addington et al., 2010). For psychiatric symptoms, while positive symptoms such as hostility and paranoid ideation were found to be positively correlated with the occurrence of the social problem solving ability in psychiatric samples (Bjerke et al., 2014), the severity of negative symptoms were found to inversely determine the performance of social skills that underlay the social problem solving ability in schizophrenia by using a regression statistical model (Ventura et al., 2013). For neurocognitive elements, a longitudinal study (Addington and Addington, 2000) showed that neurocognitive measures positively predicted the level of social problem solving in schizophrenia patients at a two and a half year follow up. Specifically, social problem solving scores were found to be significantly positively associated with psychomotor speed, vigilance, early information processing, verbal ability, verbal and visual memory, cognitive flexibility and executive functioning (Addington and Addington, 1999; Addington et al., 2001; Vaskinn et al., 2009). Most of these neurocognitive functions can be measured by a verbal fluency test (Backes et al., 2014). In addition to the above neurocognitive functions, working memory and sustained attention have been identified as specific impairments in schizophrenia (Chan et al., 2004; Chan et al., 2010; Kumar et al., 2010). However, few studies provided evidence of the contribution of working memory and sustained attention to social problem solving deficits in schizophrenia. Therefore, we adopted a test of verbal fluency, together with tests of sustained attention, working memory, visual reproduction, and logical memory to assess executive processes, attention, verbal and visual memory, and working memory function of the subjects. The second aim of the current research was to explore which of these neurocognitive functions were related to the three components of social problem solving ability and their size of contribution to the social problem solving, with the goal of promoting understanding of social problem solving deficits in schizophrenia.

The system of underlying mechanisms of social problem solving is complex. In addition to the contribution of neurocognition, it is also interesting to investigate the possible contribution of social cognition to social problem solving ability. Social cognition, such as emotion perception, has been found to mediate the influence of neurocognition on social problem solving (Addington et al., 2010). Furthermore, a previous study (Pinkham and Penn, 2006) has found that social cognition significantly contributed unique variance to the social problem solving ability beyond that of neurocognition in schizophrenia. These findings suggest that for those patients who do not have deficits in neurocognitive functions, alterations in social problem-solving skills may reflect impairments in social cognitive function domains such as emotion perception. Emotion perception is an important aspect of social cognition which contributes to the social functioning. For example, it has been found to predict vocational

functioning (Hooker and Park, 2002), and impairments in this domain have been found to correlate with poor work performance (Hofer et al., 2009). Moreover, previous researchers have found that in social perception and emotion categorization perception tasks, patients with schizophrenia utilized less available contextual information than healthy controls (Penn et al., 2002; Huang et al., 2009b). When processing ambiguous facial expression, outpatients with schizophrenia did not show negative bias (Kee et al., 2006) while actively paranoid patients with schizophrenia would attribute anger to neutral faces (Pinkham et al., 2011). Given the aforementioned findings showing deficits of social perception observed in patients with schizophrenia, we examined whether the cognitive bias in emotion perception, if present, and the accuracy of emotion/intention perception in social context was related to the deficits in the three components of social problem solving in schizophrenia. Among those social perception deficits found to be related to the social problem solving, we further aimed to investigate which one(s) contribute(s) most to explaining social problem solving deficits.

Taken together, the present study aimed: (1) to investigate the specific social problem solving deficits in schizophrenia patients in mainland China through a comparison with healthy controls. Specifically, we examined whether patients with schizophrenia have impairments in social problem solving, neurocognition, and social cognition; (2) to explore which of the neurocognition or social perception dysfunctions are related to the three components of social problem solving as measured by the CAIPSS within the schizophrenia group; (3) to answer the research question that among the neurocognitive and social cognitive dysfunctions found to be related to the social problem solving, which one(s) would contribute most or predict the levels of social problem solving in schizophrenia taking into account symptomatology. Based on these aims, we formulated three hypotheses. The first hypothesis was that the schizophrenia group would show a lower level of performance than the control group in social problem solving and neuropsychological functions such as attention and memory, and the schizophrenia group would also use less contextual information and show cognitive bias towards ambiguous facial expressions. The second hypothesis was that both the neuropsychological and social cognitive dysfunctions in schizophrenia would be positively associated with poor performance in social problem solving. The third hypothesis was that among the dysfunctions associated with social problem solving, the combination of neuro- and social-cognition components would best predict levels of social problem solving.

2. Method

2.1. Subjects

Sixty seven patients with schizophrenia were recruited from the Beijing Huilongguan Hospital. All of them were in-patients who had a diagnosis of schizophrenia. Diagnoses were based on a DSM-IV structured clinical interview (APA, 2000) conducted by an experienced psychiatrist who was blind to the purpose of this study. All of the patients had no comorbidities axis I or axis II disorder, and no history of medical or neurological disorders. All patients were being treated with antipsychotic drugs. Thirty-one healthy subjects were also recruited from the community as controls for the current study. The two groups did not differ in age, years of education, gender (all of the subjects were male) or estimated IQ. Table 1 shows the demographic information of the subjects.

2.2. Measures

2.2.1. Background cognition

Estimated IQ was obtained using four subtests (viz., information, digit span, arithmetic, similarities) of the Chinese revision of the Wechsler Adult Intelligence Scale – Revised (WAIS- RC; (Gong, 1992)).

Download English Version:

<https://daneshyari.com/en/article/6814655>

Download Persian Version:

<https://daneshyari.com/article/6814655>

[Daneshyari.com](https://daneshyari.com)